

### ABSTRACT OF THE DISCLOSURE

A gemstone fluorescence measuring device according to the invention generally includes an ultraviolet ("UV") emission chamber, a UV radiation source, and a light meter assembly. The UV radiation source includes an upper light emitting diode ("LED") and a lower LED that radiate a gemstone under test from both above and below the gemstone. The UV radiation source provides both trans-radiation and direct radiation to the gemstone, and the UV radiation source has an adjustable intensity, thus facilitating calibration of the fluorescence measuring device. The light meter assembly includes a light detector that detects the visible light emitted from the gemstone under test in response to the UV radiation. The light detector is configured to simulate the spectral characteristics of the human eye. The fluorescence measuring device converts the measured visible light into a numerical lux reading, which can then be converted into a fluorescence grade for the gemstone under test.